© SFI

Received: 24 Dec. 2016
Accepted: 1 Feb. 2017
Editor: R. Causse

First record of *Butis koilomatodon* (Bleeker, 1849) (Gobiiformes: Eleotridae) for the Maranhão state, northeastern Brazil: a case of bioinvasion

by

Erick C. GUIMARÃES (1), Pâmella S. de BRITO (1) & Felipe P. OTTONI *(1)

Résumé. – Premier signalement de *Butis koilomatodon* (Bleeker, 1849) (Gobiiformes : Eleotridae) dans l'état de Maranhão, nord-est du Brésil : un cas de bioinvasion.

L'espèce invasive, *Butis koilomatodon* (Bleeker, 1849), a été signalée pour la première fois dans l'état de Maranhão, sur la plage Araçagy à São Luis, dans le nord-est du Brésil.

Key words. – Eleotridae - *Butis koilomatodon* - Atlantic Ocean - Northern Brazil - Invasive species - First record.

Biological invasions are among the main agents of climate change around the world (Miller *et al*., 1989). Invasive species often coexist with native species for a prolonged time and gradually, the superior competitive ability of the invaders becomes evident, occasionally causing dramatic effects on the native biodiversity and habitat composition (Lasso-Alcalá *et al*., 2011). *Butis koilomatodon* (Bleeker, 1849) is an eleotrid species, which occurs natively in the coastal regions and estuaries throughout most of the Indo-Pacific Ocean between China, Philippines, Australia, and Madagascar (Miller *et al*., 1989). Invasion by *B. koilomatodon* has been recorded for Panama (Dawson, 1973); Nigeria, Guinea and Cameroon (Miller *et al*., 1989; Vreven *et al*., 2007); Venezuela (Lasso-Alcalá *et al*., 2005); and Brazil, occurring in the following states: Bahia, Espirito Santo, Pará, Rio Grande do Norte, São Paulo and Sergipe (Macieira *et al*., 2012; Soares *et al*., 2012; Contente *et al*., 2016). The present work firstly records the occurrence of this bioinvader for the Maranhão state, northeastern Brazil, and compiles its records of invasion in Brazil.

MATERIALS AND METHODS

The specimen herein examined was fixed in a solution of formalin 10% just after its capture, and then transferred to a solution of alcohol 70%. The collected material was deposited in the Coleção Ictiológica do Centro de Ciências Agrárias e Ambientais (CICCAA) of the Universidade Federal do Maranhão, with the following information and catalogue number: CICCAA 00400, 1, 41.0 mm SL, Araçagy Beach (02°28'46"S; 44°13'55"W), São Luis, Maranhão state, Brazil; P. Brito and E. Guimarães; 23 Oct. 2016. Counts were made according to Macieira *et al*. (2012).

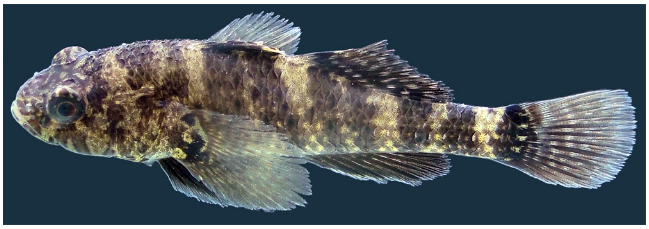

Figure 1. – Life specimen of *Butis koilomatodon*: CICCAA 00400, 41.0 SL; Araçagy Beach, São Luis, Maranhão state, northeastern Brazil.

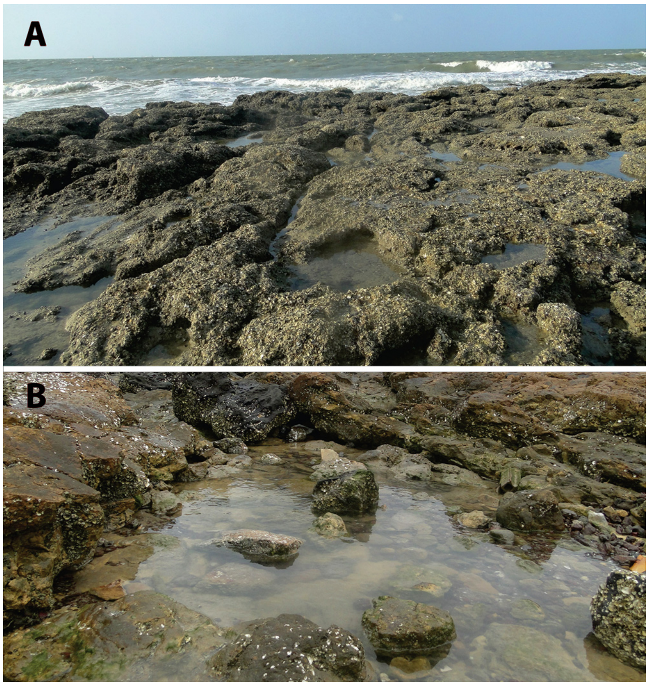

Figure 2. – Collecting site of *Butis koilomatodon*. **A**: Rock shore at Araçagy Beach, São Luis, northeastern Brazil; **B**: Rock tide pool where the specimen was collected.

RESULTS

One specimen of the invasive species *B. koilomatodon* (Fig. 1) was collected in one rock tide pool at Araçagy Beach (Fig. 2), São

---

(1) Universidade Federal do Maranhão, Laboratório de Sistemática e Ecologia de Organismos Aquáticos, Centro de Ciências Agrárias e Ambientais, Campus Universitário, CCAA, BR-222, KM 04, S/N, Boa Vista, CEP 65500-000, Chapadinha, MA, Brazil. [erick.ictio@yahoo.com.br] [pamellabrito@hotmail.com]
* Corresponding author [fpottoni@gmail.com]

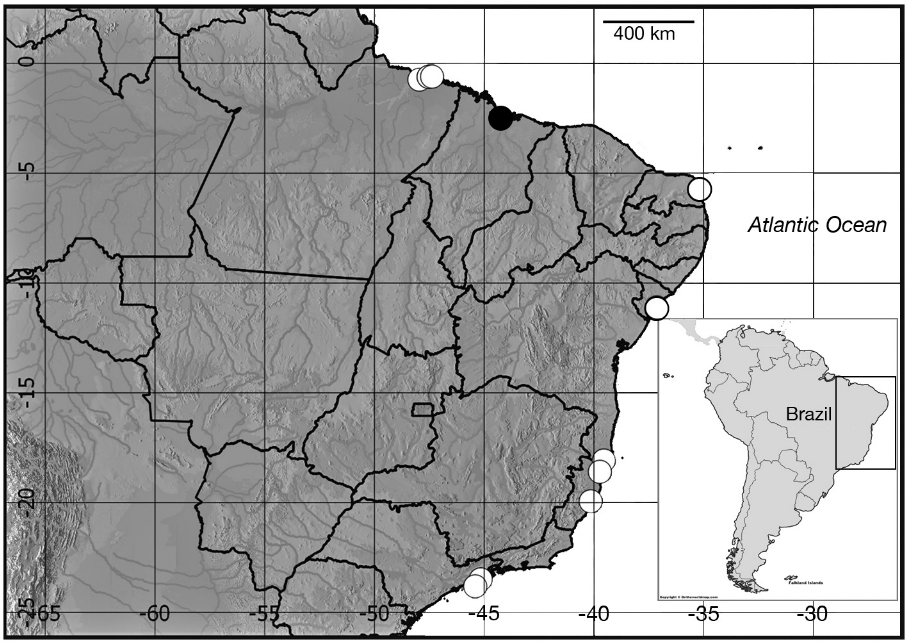

Figure 3. – Distribution of the invasive species *Butis koilomatodon* in Brazil. Black circle: new record for the Maranhão state; white circles: records based on the literature (Macieira *et al.*, 2012; Soares *et al.*, 2012; Contente *et al.*, 2016).

Luis, Maranhão state, northeastern Brazil, possessing the following parameters: temperature = 28.5°C, dissolved oxygen = 8.20 mg/L and salinity= 32.5%. This is the first record of this invasive species for the state. In addition, all its invasion records for Brazil were compiled on a map (Fig. 3). The meristic and morphological data of the specimen herein examined are as follows:

Dorsal fin counts - IV+ 9; anal fin counts - I+8; 21 pectoral-fin rays; second dorsal and caudal fins alternating dark brown and yellowish brown bars; anal and pelvic fins dark brown to black; pectoral fins hyaline brown. This species is distinguished from its congeners by having four to seven regular bands on the body and a serrated process on the snout (Vreven *et al.*, 2007, Macieira *et al.*, 2012). In the same rock tide pool where *B. koilomatodon* was found, a second exotic fish, *Omobranchus punctatus* (Valenciennes, 1836) (Blenniidae) was collected, already recorded for the Maranhão coast by Lasso-Alcalá *et al.* (2011).

DISCUSSION

The ecological consequences caused by the presence of *B. koilomatodon* in this region are unpredictable. The biological traits of this species, such as its cryptic behaviour and its diet based mainly on crustaceans and smaller fishes, could affect or impact the populations of the native species of invertebrates and fishes in many ways. Some of these consequences are the interspecific competition, and species extinction, caused by both competition and predation (Lasso-Alcalá *et al.*, 2011).

Contente *et al.* (2016) cited Loebmann *et al.* (2010) as having recorded *B. koilomatodon* for the Delta do Parnaíba, northeastern Brazil. This citation is wrong because Loebmann *et al.* (2010) just recorded one alien fish species, *Omobranchus punctatus*, but never *B. koilomatodon*.

Acknowledgements. – This study was supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq).

REFERENCES

CONTENTE R.F., BRENHA-NUNES M.R., SILIPRANDI C.C., LAMAS R.A. & CONVERSANI V.R.M., 2016. - A new record of the non-native fish species *Butis koilomatodon* (Bleeker 1849) (Teleostei: Eleotridae) for southeastern Brazil. *Biotemas*, 29: 113-118

DAWSON C.E., 1973. - Occurrence of an exotic eleotrid fish in Panama with discussion of probable origin and mode of introduction. *Copeia*, 1: 141-144.

LASSO-ALCALÁ O.M., LASSO C.A., PEZOLD F.S. & MICHAEL L., 2005. - The mud sleeper *Butis koilomatodon* (Pisces: Eleotridae): first record from the Western Central Atlantic. *Rev. Biol. Trop.*, 53: 211.

LASSO-ALCALÁ O., NUNES J.L.S., LASSO C., POSADA J., ROBERTSON R., PIORSKI N.M. & GONDOLO G., 2011. - Invasion of the Indo-Pacific blenny *Omobranchus punctatus* (Perciformes: Blenniidae) on the Atlantic coast of central and South America. *Neotrop. Ichthyol.*, 9: 571-578.

LOEBMANN D., MAI A.C.G. & LEE J.T., 2010. - The invasion of five alien species in the Delta do Parnaíba Environmental Protection Area, Northeastern Brazil. *Rev. Biol. Trop.*, San José, 58: 909-923.

MACIEIRA R.M., GIARRIZZO T., GASPARINI J.L. & SAZIMA I., 2012. - Geographic expansion of the invasive mud sleeper *Butis koilomatodon* (Perciformes: Eleotridae) in the western Atlantic Ocean. *J. Fish Biol.*, 81: 308-313.

MILLER P.J., WRIGHT J. & WONGRA T.P., 1989. - An Indo-Pacific goby (Teleostei: Gobioidei) from West Africa, with systematic notes on *Butis* and related eleotridine genera. *J. Nat. Hist.*, 23: 311-324.

SOARES B.E., RUFFEIL T.O.B. & MONTAG L.F.A., 2012. - Occurrence of the non-native sleeper *Butis koilomatodon* (Bleeker, 1849) (Perciformes: Eleotridae) in the Amazon coastal zone, Brazil. *Bio Invasions Rec.*, 1(2): 95-99.

VREVEN E.J., MUSSCHOOT T., BODEN G. & STIASSNY M., 2007. - Introduced or alien species of Lower Guinea. *In*: The Fresh and Brackish Water Fishes of Lower Guinea, West-Central Africa, (Stiassny M.L.J., Teugels G.G. & Hopkins C.D., eds), pp. 57-101. Paris: Institut de Recherche pour le Développement & Muséum national d'Histoire naturelle.